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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
|-----------------|-------------|----------------------|---------------------|------------------|

10/767,807

01/29/2004

Konstantin E. Moskvitin

00100.03.0017

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05/23/2007

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EXAMINER

BLOOM, NATHAN J

ART UNIT

PAPER NUMBER

2624

MAIL DATE

DELIVERY MODE

05/23/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

|                              |                 |  |                          |  |
|------------------------------|-----------------|--|--------------------------|--|
| <b>Office Action Summary</b> | Application No. |  | Applicant(s)             |  |
|                              | 10/767,807      |  | MOSKVITIN, KONSTANTIN E. |  |
|                              | Examiner        |  | Art Unit                 |  |
|                              | Nathan Bloom    |  | 2624                     |  |

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 29 January 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-25 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>05/21/2004</u>  | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-6, 11-12, and 18-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chan (US 6195467) in view of Kempf (US 2003/0156301) in further view of Yano (US 7031551).

Instant claim 1: A method for removing image compression artifacts comprising:

(a) comparing a center pixel value with a perimeter pixel value to generate a compare pixel value  
[*Chan: Fig. 3 and column 4 lines 50-59*];

(b) when the compare pixel value is below a threshold value: [*Chan in lines 60+ of column 4 and lines 1-20 of column 5 teaches step (b) when difference value is above a threshold value, but not below the threshold value. Kempf teaches in paragraph 0092 the filtering of a sub-image region wherein the difference between the center and surrounding pixels is below a certain edge threshold. This threshold limits the filtering to only regions of pixels with similar values, and thus prevents the undesired smoothing of certain pixels that would reduce the sharpness of the image. Based on the teachings of Kempf it would have been obvious to adapt the threshold taught by Chan to include or exclude pixels based on another known criteria such as the filtering of only similar pixels.*]

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(b1) incrementing a count value [*Chan teaches the method as shown in lines 1-20 of column 5, which includes the accumulation of differences when the threshold has been exceeded, but does not teach the use of a count value because in his computation Chan uses the total number of pixels regardless of how many met the threshold criteria. Yano, in column 2 lines 28-36 discloses counting the number of pixels differenced and then dividing the accumulated difference by this value, and in column 3 lines 15-25 the difference values that are selected are only those that meet the thresholding criteria. Given that Yano discloses a noise reduction method wherein the differencing, counting, and averaging of pixel values is performed it would have been obvious to one of ordinary skill in the art to combine the teachings of Yano with Chan to obtain a count of the number of pixels in order to enhance the averaging of the pixel values performed by Chan.*]. ; and

(b2) incrementing an accumulation value [*See Chan column 5 lines 1-20*];

(c) repeating steps (a) through (b) for each of a plurality of perimeter pixel values [*See Chan column 5 lines 1-20*]; and

(d) if count value has been incremented in step (b) [*See discussion of step (d1) below*.]:

(d1) generating an output center pixel value based on the count value and the accumulation value. [*See Chan column 5 lines 1-20 in view of Yano (division by count value instead of the total of 24 pixels) as discussed in regards to step (b1). As can be seen by the lines of code shown the averaging of the accumulation value is performed regardless of count value and thus if count is incremented the step (d1) is performed.*]

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Instant claim 2: The method of claim 1 further comprising: (e) if the count value has not been incremented in step (b):

(e1) generating an output center pixel value equivalent to the center pixel value. *[See discussion of step (d) of instant claim 1. If count is not incremented then no difference value is created then the output center pixel is modified by zero value and thus remains the same.]*

Instant claim 3: The method of claim 1 wherein the step (a) further comprising:

(a1) calculating the difference between the center pixel value and the perimeter value; and

(a2) calculating the absolute value of the difference of (a1) *[Chan column 5 lines 11-13, the difference (delta) is written in the form  $|\text{delta}|$ . GAIN term is a weighting term that can be set to a value of 1.]*

Instant claim 4: The method of claim 1 wherein the step of (d1) further comprises generating the output center pixel value as the accumulation value divided by the count value. *[Chan lines 1-20 of column 5 in view Yano as per discussion of instant claim 1.]*

Instant claim 5: The method of claim 1 wherein the threshold value defines an edge *[Chan teaches the use of thresholding in the disclosed filtering technique, but does not state that the threshold value defines an edge. However, as is evidenced by the similar technique described by Asimopoulos the threshold (sensitivity factor S) is disclosed as being used to distinguish between areas of transition or edges].*

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Instant claim 6: The method of claim 1 wherein steps of (a) through (d) are performed once per color in a color scheme [*Chan in lines 21-30 of column 4 and lines 40-45 of column 5 discloses that the image is broken down into components that are operated on by the disclosed algorithm.*]

Instant claims 11-12 claim the apparatus that perform the methods of instant claims 1-2. As per discussion of instant claims 1 and 2 the apparatus for performing the method has been disclosed.

Instant claims 18-21 encompass the limitations of claims 1-3 and 5-8 and as per rejections of claims 1-3 and 5-8 have been disclosed.

Instant claims 22-25 claim the apparatus that performs the method of instant claims 1-4. As per rejection of instant claims 1-4 the apparatus has been disclosed. The methods are taught as implemented by a computer, which have memory and a processor device.

3. Claims 7-10, and 13-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chan (US 6195467) in view of Kempf (US 2003/0156301) and Yano (US 7031551) as applied to claims 1-2 above, and further in view of Asimopoulos (US 6195467).

Instant claim 7: The method of claim 2 further comprising: (f) providing the output center pixel value to a frame buffer. [*Chan in lines 1-5 of column 5 states that the enhanced value is stored in a result array, but is unclear as to what this result array is. Asimopoulos teaches a similar algorithm for enhancing an image, and in column 6 lines 3-23 discloses outputting the center*

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*pixel to storage medium (such as a buffer) so that the new value doesn't affect the calculation of other center pixel values and so that the process is not destructive to the original image (a new image is create for with the new values). It would have been obvious to combine the teachings with Chan to prevent the destruction of the original image, and the introduction of new values into the enhancement algorithm.].*

Instant claim 8: The method of claim 7 further comprising: (g) repeating steps (a) through (f) for each of the plurality of pixels of an image except for a plurality of image perimeter pixels; and  
[*Chan lines 21-20 of column 5*]

(h) generating an output image frame including the image perimeter pixels and the plurality of output pixel values. [*See rejection of claim 7 wherein Asimopoulos outputs to a storage medium.*]

Instant claim 9: The method of claim 8 further comprising: (i) providing the output image frame to a display device. [*Chan describes the method used to process the image but does not explicitly teach the displaying of the image after processing. Examiner takes official notice that the displaying of the image after processing is notoriously well known in the art.*]

Instant claim 10: The method of claim 8 further comprising: (i) providing the output image frame to a compression engine. [*Chan describes the method used to process the image but does not explicitly teach the compression of the image after processing. Examiner takes official notice that the compression of the image after processing is notoriously well known in the art.*]

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Instant claims 13-17 claim the apparatus that perform the methods of instant claims 7-10. As per discussion of instant claims 7-10 the apparatus for performing the method has been disclosed.

Furthermore, the pixel divider of claim 13 is clearly disclosed by Chan as the values are separated for differencing.

### ***Conclusion***

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- Nadler (US 4509195) – similar to algorithm used by Asimopoulos.

### ***Contact Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nathan Bloom whose telephone number is 571-272-9321. The examiner can normally be reached on Monday through Friday from 8:30 am to 5:00 pm (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jingge Wu, can be reached on 571-272-7429. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

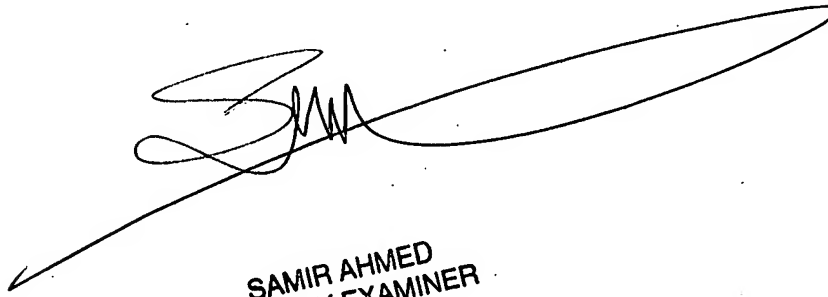
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system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Nathan Bloom

A handwritten signature in black ink, appearing to read 'Samir Ahmed', with a long, sweeping horizontal stroke extending to the right.

**SAMIR AHMED  
PRIMARY EXAMINER**